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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/677,007   | 09/30/2003  | Tingkai Li           | SLA 0793            | 7277             |
| 27518  | 7590        | 11/23/2005           | EXAMINER            |                  |
| SHARP LABORATORIES OF AMERICA, INC<br>5750 NW PACIFIC RIM BLVD<br>CAMSAS, WA 98642 |             |                      | TALBOT, BRIAN K     |                  |
|  |             | ART UNIT             | PAPER NUMBER        |                  |
|  |             | 1762                 |                     |                  |

DATE MAILED: 11/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                        |                     |  |
|------------------------------|------------------------|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |  |
|                              | 10/677,007             | LI ET AL.           |  |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |  |
|                              | Brian K. Talbot        | 1762                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 31 August 2005.
- 2a) This action is **FINAL**.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-20 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                    | Paper No(s)/Mail Date: _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date: _____ | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|   | 6) <input type="checkbox"/> Other: _____                                    |

1. The amendment filed 8/31/05 has been considered and entered. Claims 17-20 have been added. Claims 1-20 remain in the application.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
3. The Examiner noted Applicant's willingness to submit a Terminal Disclaimer upon allowance of the claims.
4. In light of the amendments filed 8/31/05, the 35 USC 112 rejections have been withdrawn.

***Double Patenting***

5. Claims 1-20 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-18 of copending Application No. 10/676,983 and claims 1-19 of copending Application No. 10/780,919. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims recite forming an indium oxide film on a silicon substrate, etching or patterning the indium oxide film, forming a ferroelectric film of PGO thereon, and completing the device.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-5 and 9-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al. (6,825,519) in combination with Asano et al. (6,407,422).

Li et al. (6,825,519) teaches selectively depositing PGO thin film to form a ferroelectric device. A silicon oxide layer is formed on a silicon substrate, a bottom electrode is formed and

patterned thereon, a PGO layer is applied, annealed and a top electrode is formed to complete the device (abstract, col. 1, lines 40-60).

Li et al. (6,825,519) fails to teach a patterned indium oxide layer as the bottom electrode.

Asano et al. (6,407,422) teaches a memory device whereby a silicon substrate (11) has a layer of metal (51) including indium/indium oxide deposited thereon. An oxide layer (52) is applied to the layer (51). Patterning and selective etching of the layer indium/indium oxide layer (51) is performed. Deposition of a ferroelectric material and top electrode are formed to complete the device.

Therefore it would have been obvious for one skilled in the art at the time the invention was made to have substituted the electrode material of Li et al. (6,825,519) process by incorporating indium/indium oxide for the electrode material as evidenced Asano et al. (6,407,422) with the expectation of achieving similar success.

Claims 7,8,15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al. (6,825,519) in combination with Asano et al. (6,407,422) further in combination with Li et al. (6,664,116).

Features described above are incorporated here.

Li et al. (6,825,519) in combination with Asano et al. (6,407,422) fail to teach the claimed processing parameters for forming the PGO film.

Li et al. (6,664,116) teaches the claimed processing parameters for forming the PGO film (col. 2, line 10 – col. 3, line 50).

Therefore it would have been obvious for one skilled in the art at the time the invention was made to have modified Li et al. (6,825,519) in combination with Asano et al. (6,407,422) by forming the PGO film as detailed by Li et al. (6,664,116) with the expectation of achieving similar results.

Claims 6 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al. (6,825,519) in combination with Asano et al. (6,407,422).

Features described above are incorporated here.

Li et al. (6,825,519) in combination with Asano et al. (6,407,422) fail to teach the claimed processing parameters for forming the In<sub>2</sub>O<sub>3</sub> film.

While the Examiner acknowledges this fact, it is the Examiner's position that sputtering indium oxide films are conventional in the art and the processing parameters utilized to produce the indium oxide film would be a matter of design choice of one practicing in the art dependent upon the desired final product. Absence a showing of unexpected results garnered from the specific claimed parameters, it is the Examiner's position that one skilled in the art would have had a reasonable expectation of success optimizing these well known processing parameters.

With respect to claims 17-20, the claims recite deposition of the PGO on the indium oxide layer is two orders of magnitude greater than that of the surround silicon oxide layer.

While the Examiner acknowledges the prior art is silent upon this feature, the combination of references teach a similar structure and hence it is the Examiner's position that this claimed

deposition rate would be inherently obtained by the prior art. If Applicant disagrees, Applicant is invited to supply support for that opposition and the Examiner will reconsider his position.

***Response to Arguments***

7. Applicant argued that the prior art failed to teach indium/indium oxide as a “workable/applicable/viable” electrode material.

Asano et al. (6,407,422) teaches that indium/indium oxide materials can be used as electrode materials to form a ferroelectric device.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian K. Talbot whose telephone number is (571) 272-1428. The examiner can normally be reached on Monday-Friday 6AM-3PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy H. Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*BKT Talbot 10/31/05*  
Brian K Talbot  
Primary Examiner  
Art Unit 1762

BKT